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QA Inspections Via Condition Monitoring

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Guidelines for Quality Assurance Inspection of Commercial Activities Contracts for Real Property Maintenance Activities

Guide #8: Grounds Maintenance

by
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A Quality Assurance (QA) Program allows the Army to evaluate and document a contractor's work performance. It depends on a QA Surveillance Plan (QASP). The QASP, which is based on the contract Performance Work Statement, lists contractor activities and the surveillance approach, number of items to be inspected, and an Acceptable Quality Level (AQL) for each activity. This series of 12 guides will help the Contracting Officer's Representative/Quality Assurance Evaluator by defining and clarifying the inspection tasks required by the QASP, which will facilitate inspection uniformity and effectiveness.

This guide discusses QA monitoring of special, improved, semi-improved, and unimproved grounds maintenance.

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A Quality Assurance (QA) Program allows the Army to evaluate and document a contractor's work performance. It depends on a QA Surveillance Plan (QASP). The QASP, which is based on the contract Performance Work Statement, lists contractor activities and the surveillance approach, number of items to be inspected, and an Acceptable Quality Level (AQL) for each activity. This series of 12 guides will help the Contracting Officer's Representative/Quality Assurance Evaluator by defining and clarifying the inspection tasks required by the QASP, which will facilitate inspection uniformity and effectiveness.

This guide discusses QA monitoring of special, improved, semi-improved, and unimproved grounds maintenance.

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FOREWORD

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The work was performed by the Facility Management Division (FF) of the Infrastructure Laboratory (FL), U.S. Army Construction Engineering Research Laboratories (USACERL). Alan W. Moore is Acting Chief, CECER-FF, and Dr. Michael J. O'Connor is Chief, CECER-FL. Special appreciation is expressed to Robert D. Neathammer, CECER-FF, and John H. Williamson, formerly of CECER-FF, for their contributions. The USACERL technical editor was Linda L. Wheatley, Information Management Office.

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1 INTRODUCTION

Background

A Quality Assurance (QA) program allows the Army to evaluate and document a contractor's performance. The Quality Assurance Evaluator (QAE) conducts skilled and carefully planned inspections aimed at verifying the satisfactory completion of contractor work. The inspections evaluate the quality, quantity, and timeliness of the services provided, not the contractor's methods used in performing the work. A good QA program promotes the best possible product within the terms of the standing contract.

A well organized QA program depends on a QA Surveillance Plan (QASP), which is prepared by the Government and contains the purpose and methods of the QA program. Although the QASP is not a part of the contract, it is based on the contract Performance Work Statement, which is part of the contract. The QASP lists contractor activities and the surveillance approach, approximate number of items to be surveyed, and an Acceptable Quality Level (AQL) for each activity.

The installation Director of Public Works (DPW), the Contracting Officer (KO), or the Contracting Officer's Representative (COR) often oversees the QASP. The COR/QAE needs an inspection guide to help define and clarify the inspection tasks required by the QASP, and to facilitate inspection uniformity and effectiveness. To meet this need, the U.S. Army Construction Engineering Research Laboratories (USACERL) developed this series of 12 inspection guides.

Objective

This guide series is intended to supplement any existing QASP and to provide QA guidance for evaluating Operations and Maintenance (O&M) work as performed by contractors on Army property. This wastewater system guide contains recommended surveillance methods that can be amended by direction of the KO or QA management to fit the needs of a specific installation.

Guide Series Organization

This series includes the following guides by USACERL published in October 1993:

#1: Water Systems (Special Report [SR] FF-94/01)
#2: Wastewater Systems (SR FF-94/02)
#3: Natural Gas Distribution Systems (SR FF-94/03)
#4: Electrical Systems (SR FF-94/04)
#5: Heating Systems (SR FF-94/05)
#6: Ventilation, Air Conditioning, and Refrigeration Systems (SR FF-94/06)
#7: Building Services (SR FF-94/07)
#8: Grounds Maintenance
#9: Surfaced Areas (SR FF-94/09)

#10: Refuse and Recyclable Handling (SR FF-94/10)
#11: Pest Control Services (SR FF-94/11)
#12: Custodial Services (SR FF-94/12).

The QAE is expected to evaluate a contractor's performance by applying appropriate visual and instrumentation procedures along with necessary technical and interpretive skills. This guide covers QAE inspection of grounds maintenance, and is divided into sections that take the inspector through a step-by-step process of recommended performance indicators, inspection tasks, and surveillance methods.

Grounds maintenance is divided into four subsystems in this guide:

1. Special Grounds Maintenance
2. Improved Grounds Maintenance
3. Semi-Improved Grounds Maintenance
4. Unimproved Grounds Maintenance.

General QA information, including detailed explanations of the available surveillance methods, is given in Chapter 2.

Chapter 3 provides performance indicators, inspection tasks, and recommended surveillance approaches for each subsystem.

Appendix A contains sampling inspection tables. Appendix B contains QAE Worksheets for each subsystem; they may be reproduced for field use.

2 GENERAL QA INSPECTION INFORMATION

Inspection Organization and Planning

According to custom and standard practice, the contractor submits copies of the previous month's O&M activities and regulatory agency reports to the COR and the QAE. The due dates of these reports control the start of inspection scheduling. If possible, the QAE's inspection should be conducted within 3 days after receiving the reports. Effective coordination will allow more efficient inspection of services. The COR/QAE should look for specific indicators of the contractor's performance and should evaluate that performance based on Detail Inspection Tasks. The following chapter lists the Performance Indicators and Detailed Inspection Tasks for grounds maintenance.

Quality Assurance Surveillance Methods

The QAE can use the following five surveillance methods to determine contractor performance:

1. Random Sampling
2. Planned Sampling
3. 100 Percent Inspection
4. Unscheduled Inspection
5. Customer Complaints.

Random Sampling

The methods are based on statistical criteria provided in Military Standard (MIL-STD)-105E, *Sampling Procedures and Tables for Inspection by Attributes* (10 May 1989) and are presented as recommendations. The methods used should be based on the unique needs of an individual system. Generally, all five methods are not used to evaluate an individual system.

Random sampling is recommended for situations where many work items are candidates for inspection. For instance, because it is impractical to inspect every roof on an installation with 500 buildings, only a select number of the buildings should be inspected. Likewise, in random sampling, only a portion of the total performed work is inspected. Acceptance of the work is based on the assumption that the inspected items are representative of the quality of the contractor's work. The random sampling technique spreads the selected samples evenly throughout the evaluation period. The following are steps to be used by the QAE in random sampling.

Tables A1 and A2 in Appendix A should be used to determine the number of samples to be inspected and the number of rejects allowed as a function of the number of inspected work items for AQLs of 4 and 10 percent, and the level of surveillance. The three levels of surveillance are: normal, increased (tightened), and reduced. Initially, this guide recommends normal surveillance for random sampling. However, under the direction of the KO, the level of surveillance can be changed depending on the contractor's performance.

As an example, assume that the contractor's total scheduled output (i.e., population size) for a particular work item is 125 units and that the normal surveillance level with an AQL of 4 percent has been selected. According to Table A1, 20 of the 125 units of work should be inspected, and the entire output of 125 units should be rejected if 3 or more of the 20 sample units are not acceptable.

The QA Worksheets in Appendix B provide room to record the population size, the number of samples, the maximum number of rejects, and the interval for each Performance Indicator.

The work planned by the contractor for each maintenance task should be listed by date to make it easier to predict the time when the work samples will be ready for inspection.

Planned Sampling

Evaluation by planned sampling inspects some, but not all, of the work activities and is appropriate when the number of work items is large. Some items are evaluated before scheduled completion because they are inaccessible after the work is completed. The COR/QAE subjectively selects key work items for inspection; the sample size is determined arbitrarily.

The COR/QAE will normally use planned sampling when the contractor's performance at selected locations or tasks is poor. With this type of evaluation, the contractor knows that work performed in these areas is more likely to be monitored. Planned sampling provides a systematic way of focusing on specific output and forming conclusions about the contractor's performance level.

100 Percent Inspection

Inspection at 100 percent requires total inspection of all items in a contract requirement. It is normally used to monitor infrequent work or critical contract work when the number of work items is small and in cases where nonperformance could seriously damage Army-furnished equipment or processes. It may also be used in areas where a contractor has had prior performance difficulties.

Unscheduled Inspection

Unscheduled inspections can be used for areas of poor past contractor performance, noncritical areas, areas of infrequent repairs, or as a follow-up check of previous inspections. If the QAE notices such an area, an unscheduled inspection can be conducted to evaluate contractor performance.

Customer Complaints

The customer complaint method is based on an informed and cooperative customer population, that is generally aware of local contract requirements. Customers are expected to monitor contractor services and, when performance is poor or nonexistent, to notify the COR/QAE. If investigation reveals that the complaint is valid, the COR/QAE documents the deficiency. Since this is a reactive QA inspection approach, this method of surveillance normally supplements planned inspection methods.

Increased Surveillance

For areas of poor past contractor performance, the QAE should consult with the KO to intensify the surveillance method. More than one option is usually available, and selection should be based on the initial method and the amount of work performed.

1. Random Sampling (Normal Surveillance) can be replaced by:

    - Random Sampling (Increased Surveillance)
    - Planned Sampling (for a large population size)

- 100 Percent Inspection (for a small population size)
- Unscheduled Inspection (for any population size).

2. Planned Sampling can be replaced by:

   - Random Sampling (Normal Surveillance)
   - 100 Percent Inspection (for a small population size)
   - Unscheduled Inspection (for any population size).

3. Unscheduled Inspections can be replaced by:

   - 100 Percent Inspection (for a small population size)
   - Random Sampling (Normal Surveillance)
   - Planned Sampling.

Decreased Surveillance

For work areas in which the contractor maintains a consistently satisfactory performance for 3 to 6 months, the QAE should consult with the KO to decrease the intensity of the surveillance. More than one option is usually available and selection should be based on the initial method and the amount of work performed.

1. Random Sampling (Normal Surveillance) can be replaced by:

   - Random Sampling (Reduced Surveillance)
   - Planned Sampling
   - Unscheduled Inspection (for any population size)
   - Customer Complaints.

2. Planned Sampling can be replaced by:

   - Unscheduled Inspection (for any population size)
   - Customer Complaints.

3. 100 Percent Inspection can be replaced by:

   - Random Sampling (Normal Surveillance)
   - Random Sampling (Reduced Surveillance)
   - Planned Sampling
   - Unscheduled Inspection (for any population size)
   - Customer Complaints.

3 GROUNDS MAINTENANCE QA INSPECTIONS

Special Grounds Maintenance

Performance Indicators and Detailed Inspection Tasks

The following numeric items are performed by the contractor. The related detailed inspection tasks are used by the QAE to verify the contractor's performance.

1. Grass is cut.

    a. Grass is not more than 3 in.* high.

    b. Grass are not cut less than 1 and 1/2 in. high.

    c. Grounds show no accumulation of clippings left more than 24 hours.

    d. Grounds show no scalping, uneven mowing, or rutting.

    e. Grounds have a clean, uniform cut with cleanly cut blades of grass.

2. Grass is trimmed and edged.

    a. Grass is edged (removed) from along sidewalks, driveways, and curbs.

    b. Grass is trimmed around trees, shrubs, fences, buildings, structures, and parking lot bumpers so that grass height does not exceed 1.5 times the maximum height of adjacent grass.

    c. The task is done in a professional manner.

3. Turf is repaired.

    a. The damaged area is completely repaired.

    b. The area is filled and leveled as needed.

    c. The damaged area is seeded or sodded.

    d. The task is done in a professional manner.

4. Storm damage is cleaned up.

    Fallen trees, limbs, debris, and silt are removed within 8 working hours.

*1 in. = 2.54 cm.

5. Leaves are collected and removed.

   Leaves are removed from areas identified as special grounds.*

6. Tree and shrub maintenance is done.

   a. Hedges are trimmed and maintained in their natural shapes.

   b. Mulch is at least 3 in. deep under shrubs and new trees.

   c. Trees are pruned in a professional manner.

   d. There are no dead trees or shrubs.

   e. Pruning:

      (1) Pruning cuts are close to the trunk or limb from which the branch is removed. No stubs are left.

      (2) Dead or damaged limbs are removed.

      (3) There are no branches with narrow-angled crotches.

      (4) Bark is stripped from below the branch that has been removed.

      (5) Wounds and pruning cuts larger than 2 in. are covered with an antiseptic asphalt wound dressing.

      (6) Pruning is not done during the fall or winter unless absolutely necessary.

      (7) Only dead, diseased, and damaged branches should be pruned from evergreen trees.

      (8) No trees are topped or headed back.

      (9) Repair of extensively damaged trees is done in a professional manner. (Note: It may be advantageous to have a professional arborist inspect this work.)

7. Trees and stumps are removed.

   a. The tree is removed.

   b. The stump is removed.

   c. The hole is filled, leveled, and seeded or sodded.

   d. The area is clean and free of debris.

---

* "Special grounds" are those indicated by the KO as special and therefore requiring a higher surveillance level. Nothing should be damaged by grounds maintenance operations (e.g., a pruned limb falling onto and damaging a building's roof.)

8. The soil sample analysis confirms the adequacy of the fertilization process.

    a. Obtain five samples of earth with a garden trowel: one from each of the area's four corners and one from the center.

    b. Place all the samples in one bag and shake the bag to mix the samples.

    c. Mark the date and location of the sampling on the bag and submit the sample to the testing laboratory.

    d. Verify that test results show adequate levels of soil nutrients. If not, consider the work to be deficient.

9. Grounds are policed.

    The grounds are free of trash and litter (i.e., paper, plastic, bottles, cans, cardboard, rags, and other foreign material).

10. Fencing maintenance and repair is done.

    a. The fence is in good repair (i.e., posts are plumb and solid, wire is tight with no sags or holes, and all damage is repaired).

    b. There is no trash or debris within 10 ft* of the fence.

Recommended Surveillance Approach

- Evaluate all performance indicators weekly using the 100 percent inspection method.

Improved Grounds Maintenance

Performance Indicators and Detailed Inspection Tasks

The following numeric items are performed by the contractor. The related detailed inspection tasks are used by the QAE to verify the contractor's performance.

1. Grass is cut.

    a. Grass is not more than 3-in. high.

    b. Grass are not cut less than 1-1/2-in. high.

    c. Grounds show no accumulation of clippings left more than 24 hours.

    d. Grounds show no scalping, uneven mowing, or rutting.

    e. Grounds have a clean, uniform cut with cleanly cut blades of grass.

---

*1 ft = 0.305 m.

2. Grass is trimmed and edged.

   a. Grass is edged (removed) from along sidewalks, driveways, and curbs.

   b. Grass is trimmed around trees, shrubs, fences, buildings, structures, and parking lot bumpers so that grass height does not exceed 1.5 times the maximum height of adjacent grass.

   c. The task is done in a professional manner.

3. Turf is repaired.

   a. The damaged area is completely repaired.

   b. The area is filled and leveled as needed.

   c. The damaged area is seeded or sodded.

   d. The task is done in a professional manner.

4. Storm damage is cleaned up.

   Fallen trees, limbs, debris, and silt are removed within 8 working hours.

5. Leaves are collected and removed.

   a. Leaf piles are collected and removed from the curbs, gutters, and drainage ditches in the family housing areas.

   b. Leaves are removed from areas identified as improved grounds.

6. Debris is disposed of.

   a. The compost pile contains only organic debris, such as leaves, clippings, and pine straw.

   b. The mulch pile contains only larger organic debris, such as trees, limbs, and branches that have been chipped.

7. Tree and shrub maintenance is done.

   a. Hedges are trimmed and maintained in their natural shapes.

   b. Mulch is at least 3 in. deep under shrubs and new trees.

   c. Trees are pruned in a workmanlike manner.

   d. There are no dead trees or shrubs.

e. Pruning:

(1) Pruning cuts are close to the trunk or limb from which the branch is removed. No stubs are left.

(2) Dead or damaged limbs are removed.

(3) There are no branches with narrow-angled crotches.

(4) Bark is not stripped from below the branch that has been removed.

(5) Wounds and pruning cuts larger than 2 in. are covered with an antiseptic asphalt wound dressing.

(6) Pruning is not done during the fall or winter unless absolutely necessary.

(7) Only dead, diseased, and damaged branches are pruned from evergreen trees.

(8) No trees are topped or headed back.

(9) Repair of extensively damaged trees is done in a professional manner. (Note: It may be advantageous to have a professional arborist inspect this work.)

8. Trees and stumps are removed.

a. The tree is removed.

b. The stump is removed.

c. The hole is filled, leveled, and seeded or sodded.

d. The area is clean and free of debris.

9. The soil sample analysis confirms the adequacy of the contractor's fertilization process.

a. Obtain five samples of earth with a garden trowel: one from each of the area's four corners and one from the center.

b. Place all the samples in one bag and shake the bag to mix the samples.

c. Mark the date and location of the sampling on the bag and submit the sample to the testing laboratory.

d. Verify that the results show adequate levels of soil nutrients. If not, consider the work to be deficient.

10. Grounds are policed.

Improved grounds are free of trash and litter (i.e., paper, plastic, bottles, cans, cardboard, and rags).

11. Fencing maintenance and repair is done.

    a. The fence is in good repair (i.e., posts are plumb and solid, wire is tight with no sags or holes, and all damage is repaired).

    b. There is no trash or debris within 10 ft of the fence.

Recommended Surveillance Approach

- Evaluate all performance indicators weekly using random sampling (normal surveillance, 4 percent AQL).

Semi-Improved Grounds Maintenance

Performance Indicators and Detailed Inspection Tasks

The following numeric items are performed by the contractor. The related detailed inspection tasks are used by the QAE to verify the contractor's performance.

1. Grass is cut.

    a. Grass is not more than 5 in. high.

    b. Grass is not cut less than 2 in. high.

2. Grass is trimmed and edged.

    a. Grass is edged (removed) from along sidewalks, driveways, and curbs.

    b. Grass is trimmed around trees, shrubs, fences, buildings, structures, and parking lot bumpers so that grass height does not exceed 1.5 times the maximum height of adjacent grass.

    c. The task is done in a professional manner.

3. Turf is repaired.

    a. The damaged area is completely repaired.

    b. The area is filled and leveled as needed.

    c. The damaged area is seeded or sodded.

    d. The task is done in a professional manner.

4. Storm damage is cleaned up.

    Fallen trees, limbs, debris, and silt are removed within 8 working hours.

5. Tree and shrub maintenance is done.

   a. Hedges are trimmed and maintained in their natural shapes.

   b. Mulch is at least 3 in. deep under shrubs and new trees.

   c. Trees are pruned in a professional manner.

   d. There are no dead trees or shrubs.

   e. Pruning:

      (1) Pruning cuts are close to the trunk or limb from which the branch is removed. No stubs are left.

      (2) Dead or damaged limbs are removed.

      (3) There are no branches with narrow-angled crotches.

      (4) Bark is not stripped from below the branch that has been removed.

      (5) Wounds and pruning cuts larger than 2 in. are covered with an antiseptic asphalt wound dressing.

      (6) Pruning is not done during the fall or winter unless absolutely necessary.

      (7) Only dead, diseased, and damaged branches are pruned from evergreen trees.

      (8) No trees are topped or headed back.

      (9) Repair of extensively damaged trees is done in a professional manner. (Note: It may be advantageous to have a professional arborist inspect this work.)

6. Trees and stumps are removed.

   a. The tree is removed.

   b. The stump is removed.

   c. The hole is filled, leveled, and seeded or sodded.

   d. The area is clean and free of debris.

7. Fencing maintenance and repair is done.

   a. The fence is in good repair (i.e., posts are plumb and solid, wire is tight with no sags or holes, and all damage is repaired).

   b. There is no trash or debris within 10 ft of the fence.

Recommended Surveillance Approach

- Evaluate all performance indicators monthly, unless otherwise noted, using the unscheduled inspection method.

Unimproved Grounds Maintenance

Performance Indicators and Detailed Inspection Tasks

The following numeric items are performed by the contractor. The related detailed inspection tasks are used by the QAE to verify the contractor's performance.

1. Grass is cut.
    a. Grass is not more than 4 in. high.
    b. Grass in drainage ditches is not more than 24 in. high.
2. Trees and stumps are removed.
    a. The tree is removed.
    b. The stump is removed.
    c. The hole is filled, leveled, and seeded or sodded.
    d. The area is clean and free of debris.
3. Fencing maintenance and repair is done.
    a. The fence is in good repair (i.e., posts are plumb and solid, wire is tight with no sags or holes, and all damage is repaired).
    b. There is no trash or debris within 10 ft of the fence.

Recommended Surveillance Approach

- Evaluate all performance indicators monthly using the unscheduled inspection method.

ACRONYMS

AQL	Acceptable Quality Level
COR	Contracting Officer's Representative
DEH	Director of Engineering and Housing
KO	Contracting Officer
MIL-STD	Military Standard
O&M	Operations and Maintenance
QA	quality assurance
QAE	Quality Assurance Evaluator
QASP	QA Surveillance Plan

REFERENCE

Military Standard 105E, *Sampling Procedures and Tables for Inspection by Attributes* (Department of Defense, 10 May 1989).

APPENDIX A: Inspection Sampling Tables

Table A1

Sample Sizes and Reject Levels (4% AQL)
(As developed from Tables I & II in MIL STD 105E)

	Normal Surveillance			Increased (Tightened) Surveillance			Reduced Surveillance		
Population Size	Class II Sample Size		Reject Level	Class III Sample Size		Reject Level	Class I Sample Size		Reject Level
08 to 50	*	25%	1	*	40%	1	*	-	-
51 to 90	E	13	2	F	20	2	*	3%	1
91 to 150	F	20	3	G	32	3	*	3%	1
151 to 280	G	32	4	H	50	4	E	5	2
281 to 500	H	50	6	J	80	6	F	8	3
501 to 1200	J	80	8	K	125	9	G	13	4
1201 to 3200	K	125	11	L	200	13	H	20	5

The Reject Level is the number of failed inspections requiring rejection of the Lot (population).
An asterisk (*) indicates that the sample level is outside the range of a 4% AQL for the selected class.

Table A2

Sample Sizes and Reject Levels (10% AQL)
(As developed from Tables I & II in MIL STD 105E)

	Normal Surveillance			Increased (Tightened) Surveillance			Reduced Surveillance		
Population Size	Class II Sample Size		Reject Level	Class III Sample Size		Reject Level	Class I Sample Size		Reject Level
06 to 15	*	33%	1	*	50%	1	*	-	-
16 to 25	C	5	2	D	8	2	*	8%	1
26 to 50	D	8	3	E	13	3	C	2	2
51 to 90	E	13	4	F	20	4	C	2	2
91 to 150	F	20	6	G	32	6	D	3	3
151 to 280	G	32	8	H	50	9	E	5	4
281 to 500	H	50	11	J	80	13	F	8	5
501 to 1200	J	80	15	K	125	19	G	13	6
1201 to 3200	K	125	22	L	200	19	H	20	8

The Reject Level is the number of failed inspections that require rejection of the Lot (population).
An asterisk (*) indicates that the sample level is outside the range of a 10% AQL for the selected class.

Table A3

Random Numbers

2	6	1	6	9	3	5	5	1	1	3	1	2	5	5	1	7	8	7	5	6	6	8	4	4	9	4	6	2	8	9	3	5
1	8	1	4	5	9	2	7	2	2	5	4	9	1	9	2	9	4	9	2	9	3	6	3	5	1	4	3	1	1	1	6	1
4	2	3	6	8	4	6	3	2	6	6	8	8	5	4	9	1	1	3	2	8	6	1	9	8	7	1	2	4	3	4	1	3
2	7	2	4	8	8	8	3	5	3	3	2	6	3	9	3	2	7	7	1	8	3	5	9	6	8	1	5	9	3	2	4	6
8	4	1	3	7	4	4	6	1	6	9	6	3	7	5	6	2	1	4	3	2	8	5	7	8	2	4	7	7	7	4	2	6
2	6	4	8	1	5	4	9	7	1	7	3	3	7	2	1	7	4	4	7	7	8	2	7	5	7	6	5	6	6	2	5	8
1	9	8	6	9	6	8	3	7	5	4	1	3	6	1	1	3	3	2	8	7	5	4	1	9	1	4	9	7	1	8	4	8
1	4	3	7	5	6	5	5	9	9	4	6	4	6	2	3	4	5	8	9	9	9	8	3	2	3	2	7	7	5	9	9	8
8	3	6	3	8	6	3	8	9	6	1	9	3	9	8	3	9	8	5	6	4	9	5	8	7	4	3	7	8	2	3	8	4
1	5	2	5	8	3	7	5	2	3	7	9	4	4	4	4	8	3	1	2	6	7	2	9	9	7	8	4	2	3	4	1	4
1	5	7	2	9	4	2	5	6	4	8	6	1	3	5	4	5	1	9	2	2	1	5	9	7	5	7	6	7	5	5	6	3
6	9	2	7	1	9	7	7	5	4	3	6	6	3	6	3	4	4	6	6	8	3	8	1	4	7	9	1	4	7	2	7	7
2	5	5	8	6	6	7	8	5	8	2	6	2	4	3	2	7	6	6	1	7	4	3	2	8	4	8	9	3	1	7	7	7
6	1	1	9	1	9	2	9	9	9	1	2	8	6	4	7	3	7	5	4	7	1	8	1	3	4	2	1	5	9	2	5	7
9	9	5	1	1	4	8	9	9	8	2	6	9	3	3	2	5	9	5	7	9	6	2	8	3	1	1	9	3	3	1	6	2
9	6	1	8	8	7	7	8	3	2	2	5	2	6	3	6	6	4	5	2	2	8	1	3	3	2	3	3	6	9	3	9	4
2	2	8	7	7	3	8	1	7	8	2	8	8	3	3	9	8	5	7	1	7	3	6	2	7	6	5	9	6	8	2	7	7
3	9	6	7	1	1	4	7	3	6	9	2	7	4	8	8	3	2	5	8	4	2	2	9	1	4	8	4	6	5	3	6	4
3	6	4	2	9	6	4	4	6	9	7	8	8	4	7	3	5	5	1	7	9	5	9	8	4	8	7	1	1	3	2	5	8
7	6	5	6	3	1	9	7	8	9	8	1	7	6	8	8	9	3	5	8	3	1	9	4	6	7	4	2	7	4	7	9	8
5	4	7	2	8	9	2	7	2	1	3	5	6	1	9	6	8	3	7	8	9	9	6	5	9	6	4	8	7	5	9	5	5
2	2	6	5	1	1	3	3	7	6	1	7	4	4	4	9	5	2	5	9	1	7	2	5	4	9	9	4	9	9	8	8	2
4	6	6	8	6	4	6	1	5	4	6	3	9	6	8	4	5	6	2	4	2	4	1	8	3	8	4	3	5	9	5	9	6
4	5	7	4	1	8	8	2	3	5	6	3	5	3	2	1	8	2	9	2	5	6	5	1	9	9	4	8	4	4	4	4	5
9	9	9	1	1	9	5	8	9	9	8	9	8	3	4	7	9	1	2	5	7	5	3	6	5	4	2	3	1	8	8	3	5
2	2	7	4	6	8	2	2	5	9	4	4	2	3	7	9	5	7	7	8	8	1	3	1	4	3	1	1	6	1	2	5	8
8	5	7	3	9	8	7	9	2	2	1	9	7	9	8	6	1	1	9	8	5	3	6	4	3	3	9	6	3	8	1	5	1
7	9	4	2	3	8	6	1	7	6	7	5	3	4	3	5	2	1	4	7	6	9	1	8	9	2	4	4	3	7	4	8	1
1	3	7	8	6	8	7	8	9	9	3	3	1	6	3	3	8	4	3	3	4	8	1	8	6	3	4	9	9	8	4	5	4
5	4	7	4	9	3	7	3	1	9	2	3	8	7	3	8	9	2	5	1	5	9	4	2	4	9	1	9	9	8	1	7	9
7	6	7	6	2	7	3	2	5	7	9	3	4	4	4	2	6	1	5	2	4	5	1	7	9	9	2	8	6	6	8	8	5
8	4	6	5	9	2	1	3	5	5	1	7	8	6	1	7	9	8	3	6	6	9	1	7	9	2	2	9	6	7	1	5	3
2	3	6	2	7	9	5	6	2	9	7	2	4	2	7	4	7	7	5	4	6	9	7	5	1	9	9	1	2	9	6	7	5
6	2	2	4	5	8	2	9	4	9	5	6	2	6	3	6	2	6	6	2	1	3	9	6	8	4	6	1	4	2	5	7	4
6	3	5	4	9	1	1	2	1	2	7	1	1	5	9	1	1	7	2	3	2	1	1	7	9	5	5	3	8	7	8	9	1
2	4	7	6	7	9	3	2	2	2	2	8	1	3	4	2	9	8	7	6	9	5	7	8	6	5	8	5	3	6	8	6	2
6	9	1	7	1	4	6	4	7	6	5	8	5	4	9	4	8	8	4	5	5	8	1	7	9	5	9	3	2	1	3	7	6
4	8	4	1	9	8	6	4	7	4	4	1	5	9	2	4	3	3	6	7	4	8	9	2	1	5	4	3	7	2	5	1	2
2	1	6	8	6	8	3	6	1	4	5	7	9	6	8	7	2	3	8	6	2	9	9	1	3	4	7	5	4	4	3	9	8
9	8	5	4	5	6	1	4	3	6	2	9	6	1	9	8	1	8	8	9	9	9	5	1	7	4	9	2	1	9	1	6	6
5	3	2	7	5	6	1	3	3	3	5	4	1	2	4	6	2	3	3	2	5	7	9	1	8	3	8	4	6	1	1	1	6
2	2	7	7	2	5	7	2	6	1	1	2	1	6	1	8	6	6	8	1	2	1	4	8	5	2	8	4	1	1	7	3	9
2	8	9	4	9	9	6	8	4	3	2	3	9	9	4	7	3	2	4	1	9	6	5	4	1	8	5	3	7	7	3	6	9
2	3	4	9	7	5	3	2	4	6	4	4	6	8	6	3	1	1	8	9	6	4	7	7	6	3	1	5	7	8	9	7	7
6	7	9	5	5	8	5	4	4	5	6	1	4	9	4	5	3	1	7	3	2	1	8	6	2	2	4	7	8	1	4	5	9
5	3	7	8	6	6	4	1	1	4	4	2	5	1	1	4	8	9	4	2	8	9	9	7	2	4	7	8	4	1	8	1	1
7	2	3	2	1	7	2	8	6	4	6	9	7	3	9	3	3	4	4	7	1	4	4	8	8	6	7	4	1	9	9	5	1
8	4	3	4	9	2	7	2	6	3	7	9	8	3	1	9	9	5	8	7	1	2	9	9	6	6	8	8	8	7	8	4	8

APPENDIX B: QAE Inspection Worksheets

Special Grounds Maintenance Worksheet Page 1 of 5

Performance Indicator #1: Grass is cut.

LOCATION			
_____	S*	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #2: Grass is trimmed and edged.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

*S = Satisfactory, U = Unsatisfactory, N = Not applicable. Circle one rating for each item.

Performance Indicator #3: Turf is repaired.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #4: Storm damage is cleaned up.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #5: Leaves are collected and removed.

LOCATION

_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #6: Tree and shrub maintenance is done.

LOCATION

_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #7: Trees and stumps are removed.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #8: The soil sample analysis confirms the adequacy of the fertilization process.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #9: Grounds are policed.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #10: Fencing maintenance and repair is done.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

_____

Quality Assurance Evaluator

_____

Date

Improved Grounds Maintenance Worksheet

Performance Indicator #1: Grass is cut.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N

Remarks:

Performance Indicator #2: Grass is trimmed and edged.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N
________________	S	U	N

Remarks:

Performance Indicator #3: Turf is repaired.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N

Remarks:

Performance Indicator #4: Storm damage is cleaned up.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N

Remarks:

Performance Indicator #5: Leaves are collected and removed.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N

Remarks:

Performance Indicator #6: Debris is disposed of.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N

Remarks:

Performance Indicator #7: Tree and shrub maintenance is done.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N
____________________	S	U	N

Remarks:

Performance Indicator #8: Trees and stumps are removed.

Using the population size______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N

Remarks:

Performance Indicator #9: The soil sample analysis confirms the adequacy of the contractor's fertilization process.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N
	S	U	N

Remarks:

Performance Indicator #10: Grounds are policed.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION			
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N
______________________	S	U	N

Remarks:

Improved Grounds Maintenance Worksheet

Performance Indicator #11: Fencing maintenance and repair is done.

Using the population size_______, and referring to normal surveillance in Tables A1 and A2 gives_____number of samples and_____number of allowable rejects.

LOCATION

____ S U N
____ S U N
____ S U N
____ S U N
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____ S U N
____ S U N
____ S U N
____ S U N
____ S U N

Remarks:

____
Quality Assurance Evaluator

____
Date

Performance Indicator #1: Grass is cut.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #2: Grass is trimmed and edged.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #3: Turf is repaired.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #4: Storm damage is cleaned up.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #5: Tree and shrub maintenance is done.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #6: Trees and stumps are removed.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #7: Fencing maintenance and repair is done.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

_____

Quality Assurance Evaluator

_____

Date

Performance Indicator #1: Grass is cut.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #2: Trees and shrubs are removed.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

Performance Indicator #3: Fencing maintenance and repair is done.

LOCATION			
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N
_____	S	U	N

Remarks:

_____

Quality Assurance Evaluator

_____

Date

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